

Remarks

Claims 1 and 10 are herein amended. Support for the amendment to claim 1 is found in claims 1 and 25 as originally filed. Support for the amendment to claim 10 is found in claims 10 and 31 as originally filed. Claims 25 and 31 are herein canceled. Claims 1-3, 5-12, 14-19, 26-30 and 32-33 are pending in the application.

Applicant notes with appreciation that the Office Action mailed September 20, 2006 withdraws rejection of claims 1-3, 5-12, 14-19, 26-30 and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371) and Killcommons et al. (U.S. patent number 6,424,996).

Applicant further notes with appreciation that the Office Action withdraws rejection of claims 1-3, 5-12, 14-19, 26-30 and 32-33 under 35 U.S.C. §103(a) in view of the combination of Echerer et al. (U.S. patent number 5,740,267), Fenster et al. (U.S. patent number 5,454,371), Killcommons et al. (U.S. patent number 6,424,996) and Buxton et al. (U.S. patent number 5,798,752).

No new matter has been added, and no new material presented that would necessitate an additional search on the part of the Examiner.

Issues under 35 U.S.C. §112

The Office Action on page 8 rejects claims 26 and 32 under 35 U.S.C. §112 ¶2. Claims 26 and 32 are rejected as reciting "with the first and last points in the series being the same point."

As a preliminary matter, claims 26 and 32 were previously amended in Applicant's Preliminary Amendment filed on July 24, 2006. In the Preliminary Amendment, this phrase was deleted from claims 26 and 32.

Applicant believes that claims 26 and 32 as amended comply with 35 U.S.C. §112 ¶2, therefore this rejection can properly be withdrawn.

Claims are not obvious

The Office Action on page 9 rejects claims 1-3, 5-12, 14-19, 26-30 and 32-33 under 35 U.S.C. §103(a) in view of Echerer et al. (U.S. patent number 5,740,267, issued April 14, 1998) in combination with Fenster et al. (U.S. patent number 5,454,371, issued October 3, 1995), Stockham et al. (U.S. patent number 6,081,267, issued June 27, 2000) and Weng et al. (U.S. patent number 5,588,435, issued December 31, 1996).

Prior to analyzing the art cited in the Office Action, Applicant believes that a brief description of the subject matter of independent claims 1 and 10 as here amended would be of use to the Examiner.

Claim 1 as here amended is directed to a method for providing and processing a cursored user interaction with a spatially displayed medical image and producing graphics related data on the medical image. The method has steps of providing a menu-less graphical interface; displaying, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface; controlling a mouse computer interface device with at least one button; displaying a pointer symbol on the graphical interface, where the pointer symbol represents a current position of the mouse on the graphical interface; tracking the status of the button;

detecting a position of the mouse, where the position detection step is activated upon actuation of the button; generating one of a plurality of different measurement graphics related to a predefined set of measurement operations on the medical image upon at least one actuation of the at least one button; when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, enabling the generation of different measurement graphics based only upon actuation of the button of the mouse when the pointer symbol is situated on the medical image such that the measurement graphics are generated without movement of the pointer symbol outside of the medical image, and enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated, where one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning.

Claim 10 as here amended is directed to an apparatus arranged to provide and process a cursored user interaction with a spatially displayed medical image. The apparatus comprises a menu-less graphical interface arranged to display, essentially unobstructed, the medical image in a substantial portion of the graphical interface without the presence of menus, toolbars and control panels on the graphical interface; a pointing device with at least one button, where the pointing device is represented on the graphical interface by a standardized pointer symbol and where the pointer symbol represents a current position of the pointing device within the context of the graphical interface; a processor configured to detect an actuation of the button of the pointing device and track positions of the pointing device; a processor-internal list of measurement operations, the measurement operations being performed upon at least one actuation of the button and producing at least three

corresponding, different measurement graphics on the medical image, the processor being arranged to produce, when the medical image is displayed on the graphical interface without the presence of menus, toolbars and control panels, the at least three different measurement graphics based on the list of measurement operations only upon actuation of the at least one button of the pointing device when the pointer symbol is situated on the medical image such that the measurement graphics are produced without movement of the pointer symbol outside of the medical image; and assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning.

Echerer et al., U.S. patent number 5,740,267, issued April 14, 1998

Echerer et al. shows a method and system for performing analyses on radiographs. See Echerer et al., column 4, lines 3-5. An x-ray is scanned into a computer system to produce a digital image. Ibid, column 4, lines 9-11. The digital image is stored in permanent storage within the system so that it cannot be modified. Ibid, column 4, lines 11-12. A copy of the image is made for display on a monitor; this copy is temporarily stored in random access memory and is lost when the computer is turned off. Ibid, column 4, lines 13-15. The system can be used to perform manual and/or automatic analysis of the image, including enhancements such as zooming and marking the image with landmarks and lines of interest. Ibid, column 4, lines 16-21. The enhancements are stored separately from the unmodified image; when a user wants to view the enhanced image, the original unenhanced image is processed each time, resulting in use of less storage space than a stored enhanced image. Ibid, column 4, lines 21-26.

Echerer et al. fails to teach or suggest displaying, essentially unobstructed, a medical image in a substantial portion of a graphical interface, as is the subject matter of claims 1 and 10 as here amended.

Further, Echerer et al. fails to teach or suggest that one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, as is the subject of claim 1 as here amended. Echerer et al. also fails to teach or suggest any assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, as is the subject matter of claim 10 as here amended.

Most important, Echerer et al. is silent as to “displaying...said medical image...without the presence of menus, toolbars and control panels on said graphical interface,” and “enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement being generated,” as admitted by the Office Action on page 13.

In fact, Echerer et al. shows defining in advance the type of measurement being generated:

By pressing the “Distance” button on the Manual Analysis menu, the CPU is instructed by the user to report the coordinates of the next two consecutive points...” [Echerer et al., column 13, lines 32-34, emphases added]

This passage clearly shows that Echerer requires a user to define in advance the type of measurement being generated, such as distance. Therefore Echerer et al. fails to teach or suggest for a medical image displayed on a graphical interface enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement being generated, as is the subject matter of claim 1 as here amended.

For any of these reasons, Echerer et al. alone does not render obvious any of pending claims 1 and 10 as here amended. Claims 2-3, 5-9, 11-12, 14-19 and 25-33 depend directly or indirectly on claims 1 and 10 as here amended and incorporate all of the subject matter of these claims and contain additional subject matter. Therefore these claims also are not obvious in view of Echerer et al.

Applicant shows below that none of the references cited by the Office Action cures these defects of Echerer et al.

Fenster et al., U.S. patent number 5,454,371, issued October 3, 1995

Fenster et al. shows a method and system for converting two-dimensional images of a target volume represented by an array of pixels into a three-dimensional image represented by a volumetric image array. See Fenster et al., column 1, lines 55-60. The array of pixels is transformed into an image array so that each slice of the image array provides sufficient data to construct an image slice. Ibid., column 1, lines 62-65. A z-slice of each image array is extracted, and the position of each pixel of the z-slice in a volumetric image array is computed. Ibid., column 1, lines 66-67; column 2, line 1. A grey-level or color value for the pixels of the z-slice is mapped into corresponding pixels of the volumetric image array. Ibid., column 1, lines 2-4. These steps are repeated until all z-slices of the image array have been processed to complete the volumetric image array. Ibid., column 1, lines 4-7.

Fenster et al. fails to teach or suggest displaying, essentially unobstructed, a medical image in a substantial portion of a graphical interface, as is the subject matter of claims 1 and 10. Further, Fenster et al., like Echerer et al., is silent, for a medical image displayed on a graphical interface, as to enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being

generated, as admitted by the Office Action on page 14. Therefore, Fenster et al. fails to cure the defects of Echerer et al.

Further, Fenster et al. fails to teach or suggest that one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, as is the subject of claim 1 as here amended. Fenster et al. also fails to teach or suggest any assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, as is the subject matter of claim 10 as here amended.

As Fenster et al. fails to cure the defects of Echerer et al. with respect to claims 1 and 10 as here amended, therefore claims 1 and 10 as here amended are not obvious in view of Echerer et al. and Fenster et al., alone or in combination.

Claims 2-3, 5-9, 11-12, 14-19 and 25-33 depend directly or indirectly on claims 1 and 10 as here amended and incorporate all of the subject matter of these claims and contain additional subject matter. Therefore these claims also are not obvious in view Echerer et al. and Fenster et al., alone or in combination.

Stockham et al., U.S. patent number 6,081,267, issued June 27, 2000

Stockham et al. shows a computerized apparatus for displaying radiological anatomical data that allows a user to stay visually focused on a display monitor where the images are displayed and maximize the display area for images. See Stockham et al., column 3, lines 17-22. Stockham et al. also shows a method for displaying radiological images on a computer screen where a user can activate various functions without accessing additional screen pages or pull down menus. Ibid., column 3, lines 40-44. Stockham et al. further

shows a method for manipulating an image display of radiological image data without moving a cursor from the image. *Ibid.*, column 4, lines 9-12 and 23-26.

Stockham et al. fails to teach or suggest displaying, essentially unobstructed, a medical image in a substantial portion of a graphical interface, as is the subject matter of claims 1 and 10 as here amended. Stockham et al. also fails to teach or suggest, for a medical image displayed on a graphical interface, enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement being generated, as is the subject matter of claim 1 as here amended.

Further, Stockham et al. fails to teach or suggest that one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, as is the subject of claim 1 as here amended. Stockham et al. also fails to teach or suggest any assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning, as is the subject matter of claim 10 as here amended. Therefore, Stockham et al. fails to cure the defects of Echerer et al. and Fenster et al.

As Stockham et al. fails to cure the defects of Echerer et al. and Fenster et al. with respect to claims 1 and 10 as here amended, therefore claims 1 and 10 as here amended are not obvious in view of Echerer et al., Fenster et al. and Stockham et al., alone or in combination.

Claims 2-3, 5-9, 11-12, 14-19 and 25-33 depend directly or indirectly on claims 1 and 10 as here amended and incorporate all of the subject matter of these claims and contain additional subject matter. Therefore these claims also are not obvious in view of Echerer et al., Fenster et al., and Stockham et al., alone or in any combination.

Weng et al.. U.S. patent number 5,588,435, issued December 31, 1996

Weng et al. shows a system and method for automatically measuring body structures of a human fetus using ultrasound. See Weng et al., column 2, lines 21-23. An ultrasonic transducer or prestored ultrasound scan is used to generate an image frame as a pattern of pixels. Ibid., column 2, lines 23-25. Each pixel has a brightness value corresponding to an echo signal from a corresponding portion of a patient's body. Ibid., column 2, lines 25-28. The image frame is displayed on a screen, and a user designates a geometry feature of the body structure and a measurement parameter associated with that geometry feature. Ibid., column 2, lines 28-33. The user selects two reference points associated with the displayed body structure, and a processing system calculates a measurement parameter and displays the measurement parameters for evaluation by the user. Ibid., column 2, lines 41-48.

Weng et al. fails to teach or suggest displaying, essentially unobstructed, a medical image in a substantial portion of a graphical interface, as is the subject matter of claims 1 and 10. As a user of Weng's method and system is designating a geometry feature of the body structure and a measurement parameter associated with that geometry feature, therefore Weng also fails to teach or suggest the subject matter of claim 1, viz., for a medical image displayed on a graphical interface, "...enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement being generated." Claim 1, as here amended, lines 23-24.

Further, Weng et al. fails to teach or suggest that one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning, as is the subject of claim 1 as here amended. Weng et al. also fails to teach or suggest any assigning means for assigning an angle value quantity to a middle point

of a continuous triple-point actuating/positioning, as is the subject matter of claim 10 as here amended. Therefore, Weng et al. fails to cure the defects of Echerer et al., Fenster et al., and Stockham et al.

As Weng et al. fails to cure the defects of Echerer et al., Fenster et al. and Stockham et al. with respect to claims 1 and 10 as here amended, therefore claims 1 and 10 as here amended are not obvious in view of Echerer et al., Fenster et al., Stockham et al. and Weng et al., alone or in any combination.

Claims 2-3, 5-9, 11-12, 14-19, 26-30 and 32-33 depend directly or indirectly from claims 1 and 10 as here amended and therefore incorporate all of the subject matter of these claims and contain additional subject matter. As Fenster et al., Stockham et al. and Weng et al. alone and in combination fail to cure the defects of Echerer et al. with respect to claims 1 and 10 as here amended, therefore claims 1-3, 5-12, 14-19, 26-30 and 32-33 also are not obvious in view of Echerer et al., Fenster et al., Stockham et al. and Weng et al., alone or in any combination. Applicant respectfully requests that this rejection be withdrawn.

#### Legal analysis of references combined

Whether an invention would have been obvious under 35 U.S.C. §103(a) is a legal conclusion based on underlying findings of fact. *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

The *Manual of Patent Examining Procedure* states: "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." [emphases added] *Manual of Patent Examining Procedure* §2142 (8th Ed. Rev.2, May 2, 2004); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Failure of the cited prior art to teach or suggest all the claim limitations

To establish a *prima facie* case for obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *Manual of Patent Examining Procedure*, §2143.03, p. 108 (8th Ed. Rev.2, May 2, 2004); *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claim 1 and claim 10, as here amended, include subject matter not found in any of the cited art. First, the method of claim 1 includes displaying, essentially unobstructed, a medical image in a substantial portion of a graphical interface. Second, the medical image, in this method is displayed on a graphical interface, enabling the generation of the at least three measurement graphics without requiring a user to define in advance the type of measurement graphic being generated. Third, the method of claim 1 is directed to a method wherein one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning.

The apparatus of claim 10 includes a menu-less graphical interface arranged to display, essentially unobstructed, a medical image in a substantial portion of a graphical interface. Second, one of the measurement graphics is an angle value quantity which is assigned to a middle point of a continuous triple-point actuating/positioning. Third, the

apparatus of claim 10 includes an assigning means for assigning an angle value quantity to a middle point of a continuous triple-point actuating/positioning.

None of the four cited primary references show any of this subject matter of claims 1 and 10, as here amended, based on the factual analysis of each reference above. Therefore, by the legal criteria discussed above, the underlying facts of the content of the cited prior art and of the present pending claims show that the prior art fails to teach or suggest all the limitations of the claims of the present invention. Therefore, a *prima facie* case that claims 1 and 10, as here amended, of the present invention are obvious has not been made.

Claims 2-3, 5-9, 11-12, 14-19, 26-30, and 32-33 that depend directly or indirectly from claims 1 and 10, as here amended, and incorporate the subject matter of claims 1 and 10 as here amended and contain additional subject matter, also are not obvious in light of the cited references. For at least these reasons, obviousness of the claims has not been established.

No explicit motivation to combine references

To establish obviousness based on a combination of the elements disclosed in the prior art in the absence of any hindsight, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *Id.* The teaching or suggestion, not merely to make the claimed combination, but also of a reasonable expectation of success, must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488; 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

None of Echerer et al., Stockham et al., and Weng et al., the more recent of the primary references, cite Fenster et al., the earliest published of the cited reference. None of

the references even cite any of the others. According to the legal criteria discussed above, Echerer et al., Stockham et al., and Weng et al. fail to provide any motivation for making a combination with Fenster et al., let alone making any combination with each other, let alone suggest that such a combination would have been successful in arriving at the claimed subject matter. As there is no citation in Echerer et al., Stockham et al., or Weng et al. to Fenster et al., there can be no teaching or suggestion even to combine any of these references. For these reasons also, the combination of these references fails to teach or suggest the present claims.

Further, these references neither teach nor suggest how to modify any of the technology of any of the other references in order to combine with the other references to arrive at the subject matter of the claims of the present application.

As none of Fenster et al., Echerer et al., Stockham et al., and Weng et al. provide any explicit motivation to one of ordinary skill in the art to have combined any elements of these primary references to have arrived at the present claims of Applicant's invention, then making the combination is using Applicant's own specification as a blueprint to reconstruct the invention, which is impermissible hindsight, viz., extracting merely an element or word from each of the four references, to attempt to reconstruct Applicant's claims, when none of the references explicitly would have taught or suggested a combination between or among any of the four references, let alone taught or suggested a reasonable expectation of success in arriving at the claimed subject matter.

The knowledge generally available to one of ordinary skill in the art would not have rendered the claims of the present invention obvious

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or

motivation to do so, found either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art. The legal criteria to determine the extent to which such knowledge is in the general art, rather than found in the Applicant's specification, has been extensively addressed by recent court decisions analyzed below.

In *Ruiz v. A.B. Chance Company*, 357 F.3d 1270; 69 U.S.P.Q.2d 1686 (Fed. Cir. 2004), the court found that the two cited prior art references both addressed precisely the same very narrow problem: the use of screw anchors to underpin existing structural foundations. Both references were solving the same problem. The court explained that motivation to combine two references was found in the nature of the problem to be solved because the two cited references in this case addressed precisely the same problem of underpinning existing structural foundations. *Id.* at 1276. The court further stated that because the prior art references address the narrow mechanical problem of underpinning existing building foundations, a person seeking to solve that exact same problem would have consulted both of the references and applied their teachings together. *Id.* Thus, *Ruiz* provides only a very narrow scenario for when the nature of the problem can provide implicit motivation to combine references, requiring the prior art references cited to address precisely the same problem as the current invention.

A second recent case, *National Steel Car, Ltd. v. Canadian Pacific Railway, Ltd*, 357 F.3d 1319, 69 U.S.P.Q.2d 1641 (Fed. Cir. 2004), also addresses the issue of when motivation to combine references can be considered proper. In *National Steel Car*, the claims at issue were directed to a railcar with a "drop deck". *Id.* at 1322. In *National Steel Car*, the court determined that the motivation to combine the two prior art references is implicit in the knowledge of one of ordinary skill in the art, because both of the two

references independently arrived at the "drop deck" railcar design. See *Id.* at 1337-1340. Since two different inventors in the field independently arrived at the claimed invention, the court decided that the motivation to combine the two cited prior art references was implicit in the knowledge of one of ordinary skill in the art. See *Id.*

In the present case, in contrast, each of the four cited references solved a different problem, and each arrived at a different solution. Thus, Echerer et al. shows an apparatus for acquiring a radiographic image, enhancing the image and extracting data from the image, and storing the enhancements and data so that relationships of objects in the image or other images can be determined. See Echerer et al., column 1, lines 17-21.

Fenster et al. shows a method and system for converting two-dimensional images of a target volume represented by an array of pixels into a three-dimensional image represented by a volumetric image array. See Fenster et al., column 1, lines 55-60.

Stockham et al. shows a computerized apparatus for displaying radiological anatomical data that allows a user to stay visually focused on a display monitor where the images are displayed and to maximize the display area for images. See Stockham et al., column 3, lines 17-22.

Weng et al. shows automatically measuring body structures of a human fetus using ultrasound. See Weng et al., column 2, lines 21-23.

The facts of each of *Ruiz* and *National Steel Car* are thus readily distinguishable from the facts of the present case. Unlike in *Ruiz*, none of the four references addresses precisely the same problem as each other, or addresses the same problem to be solved by the present claims. Unlike in *National Steel Car*, none of the four prior art references teaches or suggests all of the elements of Applicant's claims. In fact, none of the four cited prior art

references disclose any of the other references cited by the Office Action. The lack of teachings by others of the elements of Applicant's claims, as here amended, distinguishes the present case from both *Ruiz* and *National Steel Car*, and demonstrates that the motivation to combine the references cited by the Office Action was not implicit in the knowledge generally available to one of ordinary skill in the art at the time the present application was filed. Therefore, clearly, the narrow holdings of *Ruiz* and *National Steel Car* are inapposite to the present claims.

From the factual analysis and this analysis of the legal criteria, it is clear that the present claims have been used as a blueprint to pick and choose a large number of disparate references to reconstruct the claims, which is impermissible hindsight.

For any of the above reasons, Applicant asserts that claims 1-3, 5-12, 14-19, 25-30 and 31-33 are not obvious, and respectfully requests that the rejection be withdrawn.

Issues pertaining to claims 25 and 31

The Office Action on page 24, ¶11 rejects claims 25 and 31 under 35 U.S.C. §103(a) in view of Echerer et al. (U.S. patent number 5,740,267, issued April 14, 1998) in combination with Fenster et al. (U.S. patent number 5,454,371, issued October 3, 1995), Stockham et al. (U.S. patent number 6,081,267, issued June 27, 2000) and Buxton et al. (U.S. patent number 5,798,752, issued August 25, 1998).

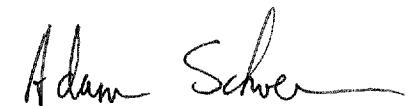
Claims 25 and 31 are herein canceled, therefore this rejection is moot and can be withdrawn.

Summary

On the basis of the foregoing reasons, Applicant respectfully submits that the pending claims are in condition for allowance, which is respectfully requested.

If there are any questions regarding these remarks, the Examiners are invited and encouraged to contact Applicant's representative at the telephone number provided.

Respectfully submitted,



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